Appl. No. : 09/611,177
Filed : July 6, 2000

REMARKS

Claims 18-40 are pending in this application. Claim 24 has been amended. In view of the following remarks, Applicant respectfully requests reconsideration.

The Term "figure of 8" Does Not Refer to a Drawing

Over several Office Actions the Examiner has continued to object to the specification in view of Applicant's use of the term "figure 8" or "figure of '8'", which refers to a well-known flight pattern of an aircraft. On January 9, 2002 Applicant amended the term "Figure 8" to the term "figure '8'" and argued that this term referred to a well-known pattern of flight. However, the Examiner maintained his objection verbatim. On June 13, 2002, Applicant again submitted arguments that the term "figure 8" referred to a pattern of flight. Again, the Examiner maintained his objection verbatim. One April 2, 2003 Applicant went so far as to amend the specification again so that the term "figure 8" became "figure of '8'" and explained that this referred to a double-looped pattern of flight, and not a Figure in the specification. However, in the Office Action mailed July 1, 2003, the Examiner has still maintained his objection verbatim.

For the fourth time, Applicant explains that the sentence including an explanation that "[t]he preset flight mode might include specific patterns, such as a "figure of 8", loop or spin" only refers to a flight pattern of an aircraft and not a missing Figure in the specification. As this term only refers to a well-known flight pattern, and not a missing figure from the specification, adding a description of a non-existent Figure 8 to the specification would be inappropriate and nonsensical.

For this reason, Applicants again reiterate that the term "figure of 8" refers to a well-known pattern of flight, and not to a missing figure. Accordingly, Applicant cannot amend the specification to add a figure that does not exist. Thus, as there is no missing figure for Applicant to provide, Applicant respectfully requests withdrawal of this objection.

Rejections Under 35 U.S.C. § 103(a)

In the Office Action, the Examiner has rejected Claims 18-40 under 35 U.S.C. § 103(a) as being unpatentable over Jenkins (U.S. Patent No. 4,725,956) in view of Berejik (U.S. Patent No. 4,964,598), Meyer (U.S. Patent No. 4,206,411) and the purportedly admitted prior art on page 6. Applicant respectfully traverses this ground for rejection.

To establish a *prima facie* case of obviousness each and every element of the claim must exist in the prior art and to combine those prior art references, a three-prong test must be met. First, there must be some suggestion or motivation, either in the references or in the knowledge generally available among those of ordinary skill in the art, to modify the reference. Second, there must be a reasonable expectation of success found in the prior art. Third, the prior art reference must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

Applicant's claims relate to a remote controlled aircraft that has an onboard control system to prevent the aircraft from entering an unsafe flight mode. Some claims relate to a method and system that reads control signals from a transmitter, reads positioning signals relating to the position of the aircraft, and outputs modified control signals in order to control the flight of the aircraft. Some claims relate to controlling the aircraft's flight by determining whether the control signals from the transmitter will place the aircraft in a flight pattern outside of a set of defined performance parameters, and thereafter modify the control signals so that the flight pattern stays within the defined performance parameters.

As explained in the specification, the recited control module reviews the transmitted control signals received from the ground and compares them to the current telemetry of the aircraft. If the control module determines that the transmitted control signals will put the aircraft in an unsafe flight mode, the control module modifies the received control signals to position the aircraft in a safer flight mode.

Jenkins

Unlike Applicant's claimed system, Jenkins discloses a system for controlling an aircraft from a ground station via a voice interface for the user. The current position of the aircraft is determined by sensors in the aircraft and this positional information is transmitted by an "autopilot system 15" to a ground station for display on the ground station instrumentation. As described, "[t]he [autopilot] system 15 is configured to accept roll, pitch, and yaw rate commands as well as throttle commands...[and] provides airspeed, vertical speed, attitude, turn and slip, altitude, and power data for transmission to the ground subsystem 23 and for display by ground pilot's flight instrument display system 19." (col. 3, lines 35-41). Jenkins further teaches that, "data from aircraft motion sensors 33, heading sensor 37 and altitude sensor 39 are transmitted to

the ground substation 23 via telemetry transmitter 28." (col. 3, lines 42-51) (emphasis added). Thus, Jenkins teaches a voice controlled flight system that includes an autopilot which transmits telemetry data to a ground substation for display on ground instrumentation.

Berejik

Berejik, et al. describe an aircraft control system that includes an "automatic pilot" 30 located between the aircraft receiver 20 and the aileron and elevator drives (col. 4, lines 54-61). The automatic pilot 30 includes a rate of turn sensor and a rate of climb sensor (Fig 4) that act as negative feedback signals to control the control signals coming from the transmitter (col. 5, lines 9-22). There is no intelligence to the system, and thus no "determinations" are made by the automatic pilot 30. The system simply takes input from the rate of turn sensor and uses it as a negative feedback to the bank angle command from the ground transmitter. Thus, if the aircraft is already engaged in a steep rate of turn, the value from the rate of turn sensor will be high, and it will more greatly reduce a bank angle command thereby preventing the aircraft from entering too steep of a turn. Similarly, the system takes input from the rate of climb sensor as a negative feedback to the pitch angle command in order to prevent the aircraft from climbing at too steep a rate. No decisions are made in this system. There is simply a negative feedback that affects the rate of turn, or rate of climb of the aircraft.

Meyer

Meyer describes an emergency system for a remote controlled aircraft that has lost communication with its transmitter (col. 1, lines 32-39). The system includes a safety circuit that is activated when operating signals from the transmitter are not received (col. 2, lines 6-19). The safety circuit replaces the operating signals with preset signals thereby preventing the remote controlled aircraft from crashing if the operating signals are lost.

The Combination of Jenkins, Berejik and Meyer Does Not Make the Claimed Invention Obvious

The Examiner argues that Jenkins discloses a control system for a remote controlled aircraft similar to Applicant's claimed system, except that Jenkins does not explicitly teach a control module that modifies control signals so that the aircraft's flight pattern is within a set of defined performance parameters. The Examiner introduced the teaching of Berejik to show that

control modules that modify control signals to a set of defined performance patterns were known in the art.

As discussed above, Jenkins does not teach an aircraft control system that modifies control signals. The autopilot system in Jenkins is only used to convert spoken voice commands into aircraft control signals. Moreover, the telemetry data that is collected by the aircraft sensors in the Jenkins system is only transmitted to a set of ground instrumentation. That data is not used to control any aspect of the aircraft's flight. To the contrary, Jenkins teaches away from such use of the telemetry in column 3, lines 10-15, 37-41 and 48-51, which all indicate that the telemetry data generated in the aircraft is only transmitted by the autopilot module to the ground receiver for display on a flight gauge, and not used by the autopilot to position the control surfaces of the aircraft.

The Examiner argues that Berejik teaches the control module that is missing from Jenkins. However, this is not the case. Berejik does not teach a control module that makes any type of determination of the type of control signals to output. Thus, there is no teaching of a method or system that determines, based on the current attitude of the aircraft, if the control signals will place the aircraft in a flight pattern outside of a set of defined performance parameters. Berejik only teaches a control module that takes input from a rate of turn sensor, or a rate of climb sensor, and uses that input as a negative feedback to the control signals. There is no "determination" of whether the control signals are outside a set of defined performance parameters. Indeed, Berejik makes no mention whatsoever of comparing control signals to any pre-stored pattern. Thus, the control module disclosed by Berejik does not provide a teaching of the claimed control module. For this reason, the combination of Jenkins and Berejik does not teach or suggest all of the limitations of the claims as required by the Examiner in order to properly reject the claims for obviousness. *See In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

Meyer does not add any teaching that would fix this deficiency. Meyer only teaches an emergency flight system that is activated once the transmitter signal becomes weak or missing. There is no disclosure in Meyer of a system that determines whether the control signals will place the aircraft outside a set of defined performance parameters. In addition, Meyer does not teach changing a flight pattern in case of an emergency by "reading" control signals, as recited in the claims. Meyer simply teaches measuring the strength of the transmitted signals, and if they drop below a threshold, they are replaced with stored signals. For this reason, the combination of

Jenkins, Berejik and Meyer does not teach or suggest all of the limitations of the claims as required by the Examiner in order to properly reject the claims for obviousness. *In re Vaeck*, 947 F.2d 488 (Fed. Cir. 1991).

There Is No Motivation To Combine The Cited References

The Examiner refers to In Re Fine for the proposition that "obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art." *See, In re Fine*, 837 F.2d 1071, 5 USPQ.2d 1596 (Fed. Cir. 1988). With respect to the particular facts of In Re Fine, section 2431.01 of the M.P.E.P. explains that:

> the claims were directed to a system for detecting and measuring minute quantities on nitrogen compounds comprising a gas chromatograph, a converter which converts nitrogen compounds into nitric oxide by combustion, and a nitric oxide detector. The primary reference disclosed a system for monitoring sulfur compounds comprising a chromatograph, combustion means, and a detector, and the secondary reference taught nitric oxide detectors. The examiner and Board asserted that it would have been within the skill of the art to substitute one type of detector for another in the system of the primary reference, however the court found there was no support or explanation of this conclusion and reversed.

Thus, the court found that absent "support or explanation" for the combination, the Examiner's rejection based on a substitution of a known detector for a different type of detector disclosed in a primary reference was not supported.

Applying this case to the Examiner's rejection, it is clear that the substitution of a known sensor (an accelerometer) for a sensor disclosed in any of the primary references (Jenkins, Berejik, and Meyer) is not supported without additional motivation, which has not been presented by the Examiner. Stated more generally, the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). The Office Action fails entirely to provide any motivation or desirability from the prior art suggesting the use of an accelerometer in the systems of Jenkins, Berejik, or Meyer.

Astonishingly, the Examiner is using the teachings of Applicant's own specification to purportedly provide the missing motivation. Use of a patent specification to show motivation to

make the invention described and claimed in the specification is improper. *See, Oetiker*, 977 F.2d at 1447, 24 USPQ.2d at 1446 (The motivation to combine references cannot come from the applicant's specification or invention itself.). Thus, the combination of an accelerometer with the systems of Jenkins, Berejik, and Meyer is improper.

Independent Claims 18, 24, 34 recite the use of an accelerometer. Claim 35 recites measuring a component of static acceleration, which is taken by an accelerometer. Accordingly, the combination of Jenkins, Berejik and Meyer would not make Claims 18-40 obvious to one of ordinary skill in the art. For this reason, Applicant respectfully requests withdrawal of this rejection and allowance of the pending claims

CONCLUSION

The Applicant has endeavored to address all of the concerns of the Examiner in view of the Office Action directed to the above-identified application. Accordingly, amendments to the claims for patentability purposes, the reasons therefore and arguments in support of the patentability of the pending claims are presented above.

In light of the above amendments and remarks, reconsideration and withdrawal of the outstanding rejections is specifically requested. If the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, the Examiner is respectfully requested to initiate the same with the undersigned.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,
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